

## **REMARKS**

Elected claims 1, 2 and 7-10 are pending in the present application for further prosecution. Arguments and a Declaration of Kouichi Takemoto under 37 CFR §1.132 are submitted for overcoming the rejections based on the prior art of record. For reasons discussed herein and in the Declaration, Applicants respectfully request reconsideration of the rejections and respectfully submit that claims 1, 2 and 7-10 are in condition for allowance.

### **I. Claim Rejection – 35 USC §103(a)**

A. *In the FINAL Office Action dated July 20, 2010, claims 1, 2 and 7-10 are rejected under 35 USC §103(a) as being obvious in view of the 1995 publication of Fujiwara et al. titled “Ductility of Ultra High Purity Copper”*

It is admitted in the FINAL Office Action that Fujiwara et al. fail to disclose “that the content of impurities excluding gas components totals no more than 0.01ppm” (with respect to claims 1, 2, 7 and 8 of the present application) and fail to disclose “that the content of Ag is less than 0.005ppm, Al is less than 0.0001ppm and Fe is less than 0.001ppm” (with respect to claims 9 and 10 of the present application). In addition, as argued in Applicants’ previous Amendment, Applicants respectfully submit that Fujiwara et al. also fail to disclose a copper material having a purity of 8N or higher and a copper material having a residual resistance ratio of 38,000 or greater (with respect to all pending claims of the present application).

Applicants respectfully submit that it would not have been obvious to provide a copper material with the above referenced limitations based on the teachings of the Fujiwara et al. publication at the time the present inventors made the present invention.

As stated in Applicants’ previous Amendment and as stated in the Declaration of Kouichi Takemoto submitted herewith, the copper material disclosed in Fujiwara et al. contains the

following impurities: 0.011 mass ppm Ag; 0.003 mass ppm Al; 0.023 mass ppm Si; 0.004 mass ppm Ti; and 0.002 mass ppm Fe. The total impurity content of these five impurity elements (Ag, Al, Si, Ti and Fe) total 0.043 mass ppm. This corresponds to a purity level of 99.9999957mass % (without respect to other possible impurities), which corresponds to 7N5 purity at best, not 8N purity. Thus, the sample indicated as 8N-Cu by Fujiwara et al. is more accurately of 7N5 purity or less. Accordingly, Applicants respectfully submit that Fujiwara et al. fail to disclose a purity level of “8N or higher” (99.999999wt%) required by claim 1 of the present application. Of course, as admitted in the Final Office Action, Fujiwara et al. also clearly fail to disclose a total content of all impurities excluding gas components of no more than 0.01ppm and clearly fail to disclose contents of Ag of less than 0.005ppm, Al of less than 0.0001ppm and Fe of less than 0.001ppm.

In addition, based on the above content of impurity of Fujiwara et al., it is stated in the Declaration that the copper material disclosed by Fujiwara et al. would also not have a residual resistance ratio of the present invention.

Still further, it is respectfully submitted that the copper material required by the claims of the present application would not be obvious because the underlying purification process by which the present invention was made is not predictable or obvious to one of ordinary skill in the art relying on the teachings of the Fujiwara et al. publication. In addition, there is no motivation or common sense reason presented to one of ordinary skill in the art by Fujiwara et al. for providing a copper material beyond the limits disclosed in the Fujiwara et al. publication. Further, the inventors of the present application have discovered unexpected results with their copper material over that disclosed in the Fujiwara et al. publication.

As stated in the Declaration of Kouichi Takemoto, the elimination of Ag from copper of the required purity is difficult. Fujiwara et al. provide no common sense teaching that Ag can or

should be reduced beyond 0.011ppm in an “ultra high” purity copper material. Of course, the present invention requires the total impurities excluding gas components to be just 0.01 ppm or less and Ag impurities to be less than 0.005ppm. Fujiwara et al. does not enable one of ordinary skill in the art to reduce Ag beyond 0.011ppm and provides no common sense reason for further reduction.

With respect to unexpected results, the present application, as filed, discloses that a sputtering target made from the material required by the claims of the present invention generates less unwanted particles during sputtering. See page 8, lines 15-19, of the present application, as filed. There is no teaching or expectation provided to one of ordinary skill in the art by Fujiwara et al. that a further reduction of particles produced by a copper sputtering target during a sputtering operation would be achievable.

Further there is no teaching by Fujiwara et al. that quality improvements of the copper material when used as a standard thermometric sample could be achieved.

For all the above stated reasons and for the reasons discussed in the Declaration of Kouichi Takemoto, Applicants respectfully submit that the claims of the present application are patentable and non-obvious relative to the Fujiwara et al. publication. Accordingly, Applicants respectfully request reconsideration and removal of the above referenced §103(a) rejection of the claims.

*B. In the FINAL Office Action dated July 20, 2010, claims 1, 2 and 7-10 are rejected under 35 USC §103(a) as being obvious over Fujiwara et al. in view of U.S. Patent No. 5,206,430 issued to Itoh et al.*

The primary reference, Fujiwara et al., is discussed in detail above including its deficiencies relative to the claims of the present application. Applicants respectfully submit that the additional teachings provided by Itoh et al. likewise fail to overcome the cited deficiencies.

Itoh et al. merely discloses that active carbon can be added and mixed into a solution and then removed therefrom via a filter. See, for instance, column 3, lines 54-56, of the Itoh et al. publication.

For the reasons stated in the Declaration of Kouichi Takemoto, the mere addition, mixing and filtering steps of Itoh et al. will not reduce Ag content below that disclosed in Fujiwara et al. and will certainly not meet the limitations required by the claims of the present application.

For this reason, and for all the reasons discussed above relative to the patentability of the claims of the present application over Fujiwara et al., Applicants respectfully submit that claims 1, 2 and 7-10 of the present application are patentable and non-obvious relative to Fujiwara et al. in view of the Itoh et al. patent. Accordingly, Applicants respectfully request reconsideration and removal of the above referenced obvious rejection.

## **II. Conclusion**

In view of the above remarks and the Declaration of Kouichi Takemoto submitted herewith, Applicants respectfully submit that the rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

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Respectfully submitted,  
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